

## **Paleoclimatic and paleoenvironmental evolution since the Late Glacial Period in Jura mountains: examples from the Lake Val (France) and the Amburnex peatland (Switzerland)**

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Numerous glacial paleolakes took place in the Swiss and French Jura during the retreat of a Würm ice sheet. Two sites were investigated: the Amburnex Valley site (Switzerland), which evolved in well-developed peatland and the Lake Val (France), which is still persisted as a lacustrine system. During the Late Glacial period, both sites were glacial lakes characterized by a significant accumulation of lacustrine sediments.

Using a multiproxy approach, this project aims to reconstruct the paleoclimatic and the paleoenvironmental evolution recorded in lacustrine sediments and peatbog deposits since the last 13'000 years. The Amburnex core (7m) exhibit a basal morainic deposit from the Würm period, overlain by three meters of lacustrine deposits and four meters of peatland deposits. The Lake Val core (4.5m) consists of the same lithological succession. A multiproxy approach based on palynological analyses, grain-size analyses, mineralogical analyses (XRD) and geochemical analyses (TOC, Nitrogen, Phosphorus and Mercury contents; major and trace elements; organic carbon isotopes) have been used to characterize the hydrological and climatic fluctuations, the trophic level and the origin of organic matter in order to reconstruct the paleoenvironmental and paleoclimatic evolution of this area.

In the Amburnex site, the Bølling-Allerød, the Younger Dryas and the beginning of the Preboreal period have been recognized by palynological analyses and confirmed by carbon 14 dating. During the Oldest Dryas, oligotrophic conditions took place as suggested by the very low concentrations in nitrogen and organic matter. Then, during the warmer Bølling period, an enrichment in total organic carbon (TOC) associated with a decrease in phosphorus content are observed, implying the development of eutrophic conditions and maybe phosphorus recycling. Later in the Allerød period, low TOC and phosphorus contents, associated with varved carbonate deposits, indicate a return to more oligotrophic conditions. New organic matter enrichments are observed in the interval corresponding to the colder Younger Dryas period. These trends are quite consistent with those observed in the Lake Val and reflect significant changes in runoff and nutrient inputs at least at regional scale.

**Mots-Clés :** Paleoclimate, paleoenvironment, lacustrine deposits, Late Glacial, palynology, geochemical proxies